

M-30 MIXER



TASCAM
TEAC Production Products



The first TASCAM design team for recording consoles was formed in 1969. At that time, TEAC had already been building magnetic recording systems for 20 years, so we were familiar with the technical requirements of the multitrack process. We had already done most of the scientific research. Even in those early days, one multitrack concept was already crystal clear. In the world of technology, the Scientist may be King, but in the world of multitrack recording, scientific accuracy would

simply not be enough. To develop a truly useful product, our design teams would have to leave the laboratory, and go into the field. Designing a mixer by beginning with the concept of basics first would inevitably lead us far away from the technical details of the transistor junction, or the analysis of an integrated circuit. In addition, the design of a mixer to a fixed target price poses some problems that are not found when you are only looking at cost is no object, state-of-the-art solutions. We had to deal with the problem at the functional level first.

What is basic? How many circuits do you need to do the job? What, in fact, *Is* the "job"? Not just the definition of multitrack recording made by some major network or record company multimillion dollar installation, but in the field today, and for TASCAM, that includes the production room at the ad-

vertising agency, the home of the musician, the small video post-production company, the multi-media producer, the Church tape ministry, and many other locations. In the long run, a little functional reality might prove to be just as beneficial to the user as a whole lot of technology. If we could pay more attention to defining the whole system and its functional needs, we would be able to lower the cost.

In the final analysis, we think that the working craftsman knows the tools best, so your needs would be our best definition of what functions to put in, and what to leave out. This concept became part of our basic policy.

WE BUILD WHAT YOU ASK FOR— MULTITRACK BASICS

All multitrack production has these three basic categories.

1. The basic track.
2. The overdub. Add parts and then—
3. The remix.

You must begin with something, no matter what sound your art form calls basic, and then you use the multitrack capability to add more, no matter what type of sound it is that you are adding, and last but not least, you must "mix" all the parts together to the final format.

We found that these 3 separate parts of the multitrack process require what could be described as three totally different mixers! Each multitrack job has a different focus, and controls that are most important at one time/mode are not as important in another, and in some jobs, are not needed or used at all! At this point, a method for making cost effective decisions about the Model 3 Mixer began to appear, a worthwhile compromise that would lead us to the savings. It finally comes down to this simple question:

CAN THIS CIRCUIT DO MORE THAN ONE MULTITRACK JOB?

Does the specific part of the multitrack process that we are doing *Now* need this group of controls *Now*? Must these two groups of controls operate at the same time? Or—may we reroute these circuit controls to a more appropriate function and not have to have



Two sets of controls, one for each multitrack task? The answer turned out to be yes in many cases, and the design of the Model 3 with its re-patchable *Submixer* and *Monitor* sections has become the best selling and most widely used multitrack mixer ever built.

An entire generation of recording engineers have begun their professional audio careers with the original Model 3. This design has come to be the benchmark against which all other 8x4 low-cost mixers are judged. When functions are compared, not many can come close, and when cost is included in the comparison, there is usually no comparison possible. The winner on balance, all things considered is always the "Three." In the long run, all our products have proved to have some-

thing in common with the state-of-the-art custom built console. In multitrack, it's the same bottom line for everybody, regardless of your style of work, or the size of your studio. A real necessity.

RELIABILITY

The Model 3 turned out to be another TASCAM bulletproof "block of stone." M-3s have been dropped, flooded, mashed, bent, burnt, sat on, set up with outputs patched to outputs, shipped "bare naked" or in inadequate cases and at the moment of truth, when powered up again—

No problem.

The "3" simply went back to work as if nothing unusual had happened! This reliable and time-proven mixer has earned the respect of engineers worldwide, and the success of our original design can be summed up in a phrase quite simply:

A BETTER BALANCE

With the introduction of the Model 30, the refinement of our original design continues, and our continuing concept of balance leads inevitably to a new standard against which all others will be compared. The design changes we have made in the Model 30 now expand and extend the functions of our original landmark Model 3 open-ended control layout to include switch assignment of the *Submix* section in addition



to exterior patching, and parametric sweep type EQ. There are many more functions in this new model, and a lot of new technology as well.

The Model 30 electronics have been completely re-engineered to run on bipolar ± 15 volts D.C. We'll detail all the changes in the following pages of this brochure, but before we do that there is another side to the TASCAM concept of balance in multitrack design, and it's a very important one.

THE TASCAM SYSTEM

When we go over your long lists of functional necessities, it becomes obvious that many of the routing and control functions that are so important

change from application to application. That fine line between the frivolous and the necessary often depends on the specifics of the multitrack job that you are talking about. In multitrack, functional balance is an elusive quality. It depends heavily on the little things that make the job easier. Before the introduction of the Model 3, little things like built-in phono preamps and separate monitor systems could only be had from custom-built consoles, where the burden of paying for the design and construction of the little necessities one at a time resulted in those astronomical custom-built prices. The custom console can be ordered with all the little features in place, but how about TASCAM? How can we be all things to everyone in the multitrack industry, and solve all the functional problems with a *Basic* mixer design? We found a way, and you can get what you need without paying the high cost of custom construction.

TASCAM SYSTEM EXPANDABILITY

Like many other elegant and powerful concepts, it turns out to be simple. All the knobs don't have to be on the same chassis! With the TASCAM system when all you need is "just one more cuemix," you can buy "just one more cuemix." Pick up a Model 1 8x2 line level accessory submixer, add its capability to the main chassis and all your problems may disappear. Two more submixes? Certainly! All those pre- and post-fader patches on our original Model 3 design are still there on the Model 30! All our mixers can supply signal for extra mixes when you add Model 1's. You can see why we call the Model 1 the solution looking for a problem! One more mix, at $\frac{1}{6}$ of the price of the M-30. Incidentally, the



Model 1 was developed from the patch assignable *Submix* section of the original Model 3!

We have other good problem solvers as well. Need to move that back panel patch bay to a more convenient location? Check out a PB-64 Patch Bay. 64 points not enough? Buy two and rack-mount them. Most TASCAM accessories can be rack-mounted, and we give you a set of rack mounts with each rack-mountable accessory. Need to meter your *Direct Outputs* or check levels on your recorder when you can't see it? We sell 4 meters called the MB-20 for about the same price as the Model 1.

If our job-by-job method of problem solving looks good to you, pick up our other system brochures and you will find low-cost expansions to our mic inputs and more sweep EQ. Our total TASCAM system will allow you to

build a studio that will do precisely what you need, right out of our catalogs, and every dollar of your budget will buy something useful!

How about big consoles? We make those as well, but we advise you to think carefully before you decide on an 8 buss or larger mixer just because you plan on an 8 track recorder. As your track count rises, you will spend more and more time with one mic. The big console accessory mixes will be doing all the work, and the extra inputs will do nothing useful except heat up the control room. Buying a big console just for its image is very expensive, so consider our sensible TASCAM system add-on approach first. We'll say it again. All the knobs don't have to be on the same panel.

M-30 SYSTEMS.

*FINDING EXTRA MIXES AND
EXTRA MIC INPUTS*

We've shown you the use of Model 1s, MB-20s and PB-64s to make up actual cost effective systems, but here's one

we don't show that you might not have thought about. A system with one M-30 and one M-35 (get our separate 16-page brochure for this mixer) will include all those not-so-little Model 30 Mixer extras like *Phono Preamps* and *Direct Boxes*, along with 14 *Balanced Mic Inputs* and that "deluxe" M-35 8 Track Monitor System. Many find that this dual mixer 8 track system is just what the doctor ordered. In the TASCAM system, we have many more practical solutions to the multitrack studio. You never have an all-or-nothing financial decision when all you need is one more mix.



THE INSIDE STORY

When we start talking seriously about the Model 30, it makes good sense to begin with the "guts." When you are seriously considering the purchase of a studio system, you can be sure that our engineers always begin with reliability as the first design criteria. All of our Model 30 specifications result from the application of solid construction methods and time-tested engineering practices. When you look inside any TASCAM product, you will find a lot more in common with the custom-made console: expensive things like hand-tied harness wiring, individual circuit cards and individual modular steel subchassis. Deluxe methods! Do you really need all this? We think so, and here's why. If you work in a shielded laboratory and use a research-grade

power source, it's easy to get good results from integrated circuits and simple construction, but after 12 years of mixer design we've learned that's not going to be enough. In the real world of multitrack production, all kinds of design problems can develop when you have 40 dual I.C.s running on one supply. More troubles with R.F and crosstalk can arise when you have all the parts of a complex mixing system on one big circuit board. In multitrack, you need more insurance, so we use the old-fashioned methods. We build each module on its own circuit card for better isolation and mount it on a steel subchassis for strength and shielding to make sure that you will have no unpleasant surprises. Note also that we don't have the circuit card connected to the rear panel with no room to spare. Even though it costs more, we leave room, and that little bit extra may keep you going after some violent incident puts a big dent in the back panel! With TASCAM products, mechanical damage doesn't always mean you are out of business!

For more of that little bit extra. We build Model 30 electronics from standard integrated circuits run well under the absolute design limit. Those few dBs of improvement you can get from operating critical circuits on the ragged edge of failure may appeal to the state-of-the-art custom-console designer, but when the chips are down, your system must be up and running or there will be no art at all. Bipolar 15 volts and the 4559, TLO 72 type of dual integrated circuit are a part of the TASCAM system that is well understood everywhere in the world.

BIPOLAR + AND -15 VOLT D.C. POWER SUPPLIES

Bipolar D.C. power leaves your electronics at zero potential when no signal is present, and provides much better insurance against hum and radio frequency interference. Since the maximum signal output before clipping is a function of the power supply voltage,

even with our "safe" ± 15 volts it works out to be a truly generous $+15$ dBV for all outputs. When you consider that figure in relation to our "system" reference zero of -10 dBV, the headroom you get is a whopping 25 dB. The figure applies to more than just the output stages. This generous margin is available at every internal stage as well, insuring that no matter what must be done to a signal, you won't have to worry about internal overload. Extensive EQ on a difficult sound? No problem.

HOW ABOUT THE FIRST GAIN STAGE?

The critical mic preamp? Any engineer will tell you what can happen when a hot drummer gets together with a hot mic. You wind up with line level on the mic cable! Again, no problem. We give you *Mic Preamp* and *Buss Output* L.E.D. *Overload Indicators* and plenty of attenuation. On the M-30, there is 40dB of padding available to put in front of the *Mic Transformer*, and each input has its own L.E.D. *Overload Indicator* to tell you when you need to use it. Little things count. These little lights will tell you which input is causing your mix to overload, and if you need to know, you need to know *Right Now* or there will be no way to continue, and the session will stop! This feature may turn out to be not so little after all.

COMPLETELY WIRED BACK PANEL R.C.A. JACK PATCH POINTS

We use this connector on everything in the Series 30 except the mic inputs. Why not XLRs? Phone jacks? Because they run anywhere from five to ten times the price of R.C.A. connectors. Here is a good example of the TASCAM concept of a balanced approach to a design in action. In any multitrack studio, the interconnect system is going to be extensive. If we start with the R.C.A. connector, the difference in true system cost to you just for the cable alone can easily pay for your mic stands and mic cables. When you expand, the savings continue.

PARAMETRIC (SWEEP TYPE) EQUALIZERS

This is the feature that everyone asked for on the M-30. The purists will tell you that it is always better in the long run to move the mic or put up a different mic altogether to get the sound, but let's be blunt. Do you own all the mics

on the purist's deluxe studio list? When the session starts, you are on the hot seat. A continuously adjustable equalizer will allow you to "tune" the circuit to precisely the right point and will allow you to make the most of the mics you have. Let's make one more point about our series 30 EQ. In multitrack productions, you can't always predict the future. When all the parts are finally on the tape, the sound you have may prove to be very different from the sound you want. In mixdown you will need all the help you can get. Parametrics can bail you out of all kinds of mix trouble with minimum damage to your audio quality.

On the M-30 there are two separately patchable stereo *Phono Preamps* that can be routed to any line level input on the M-30 or, to another mixer in your system via patch cords. The last two *Mic Preamps* (7-8) use a phone jack instead of an XLR and can be used as transformerless musical instrument inputs (active "direct" box) for electric guitars and basses. Don't need these features? We have a kit for these *Inputs 7-8* that will convert them to transformer isolated XLR's just like the other 6 *Mic Ins*!

In the area of more little details that can prove significant, we arrange the switches that select the module signals in an unobstructed row so you can run your finger along the line and change routing almost as fast as a "one button" relay operated function.

Features like these may seem trivial, but if you price a pair of outboard phono preamps or an active "direct box" you may change your mind, and when you need "just two more mics" there is a way to solve the problem without refinancing your equipment budget.

The M-30 is internally modular, and will operate with individual circuit modules removed. If something goes wrong, you can remove a module with just a screwdriver. No de-soldering is required, so when you do have a problem, you will be able to get parts out, and you won't need a Ph.D. for a repairman. Does TASCAM talk about repair? Of course. We have the best reliability record in the industry, but regardless of that record, technology is not magic. What man can make, man can break, and we believe that being prepared is always the best insurance. As a matter of policy, we provide complete documentation for every TASCAM product. Schematics, disassembly drawings and parts lists, and our own-

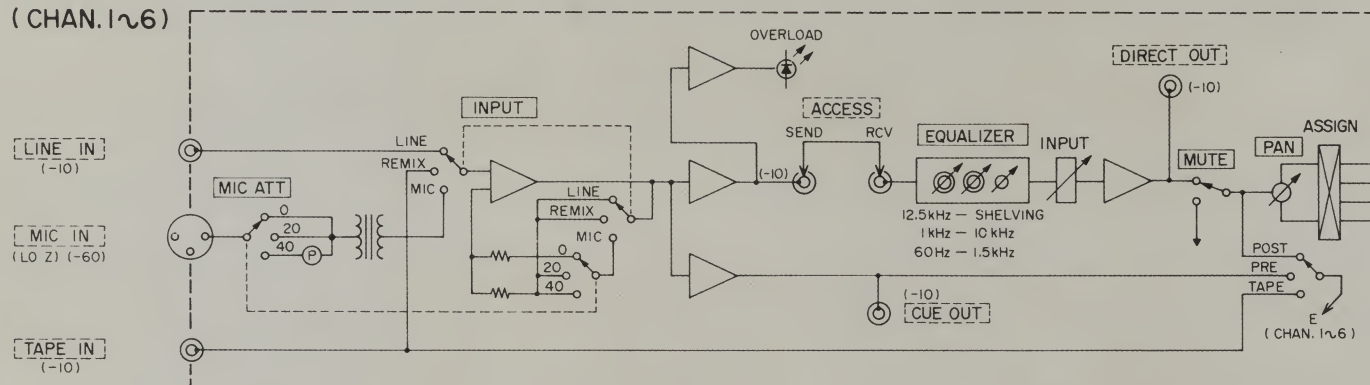


TASCAM Provides Complete Documentation For Every Unit.

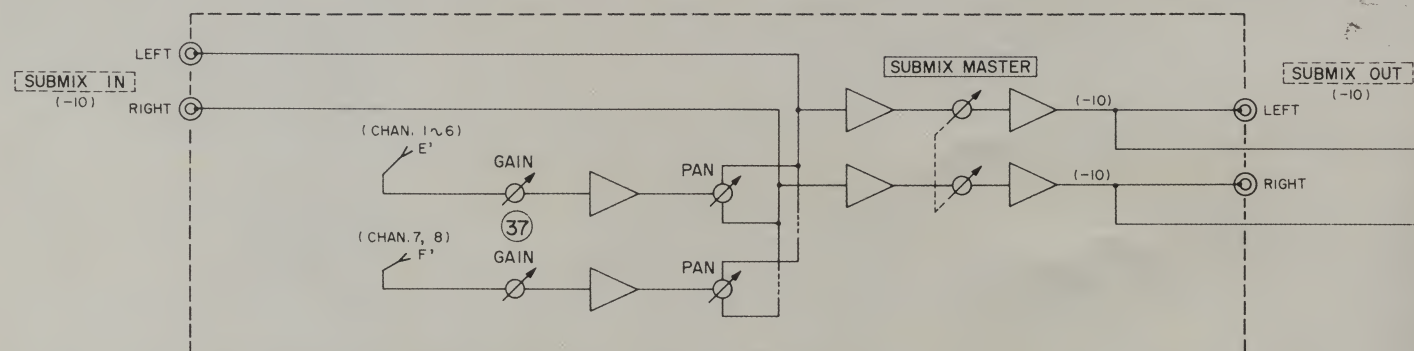
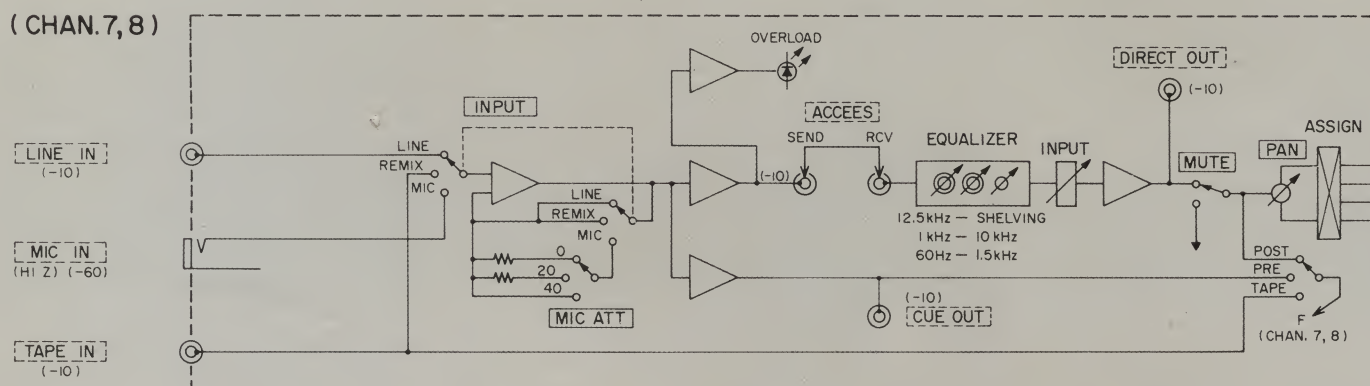
er's manuals are written for owners, not scientists. Don't know how to do a bias adjust? Can't read a block diagram? No problem, our owner's manuals are designed to help you learn. The M-30 does nothing useful unless it is connected properly to quite a lot of sophisticated equipment. Mics, tape recorders, power amps and loudspeakers all play a part in the multitrack process and each piece of equipment has its own technical vocabulary. We always take the time to make our owner's reference manuals as simple as technology will allow. Each section gives you some basic instruction in the terminology as well as a list of "what plug" goes into "which jack." Practical "rules of thumb" for the multitrack process are not generally available, so to begin our manuals, we always start with some basic audio information. sound and numbering systems used to describe it, impedance — what the term means and how to deal with it when you must connect the M-30 to other equipment. In TASCAM owner's reference manuals, aspects of scientific terminology are always fully explained in the most basic terms we can use. If you want to see just how much extra information we include in each manual, we'll sell you a copy. Contact us at the address on the back of this brochure and you will be able to read before you buy.

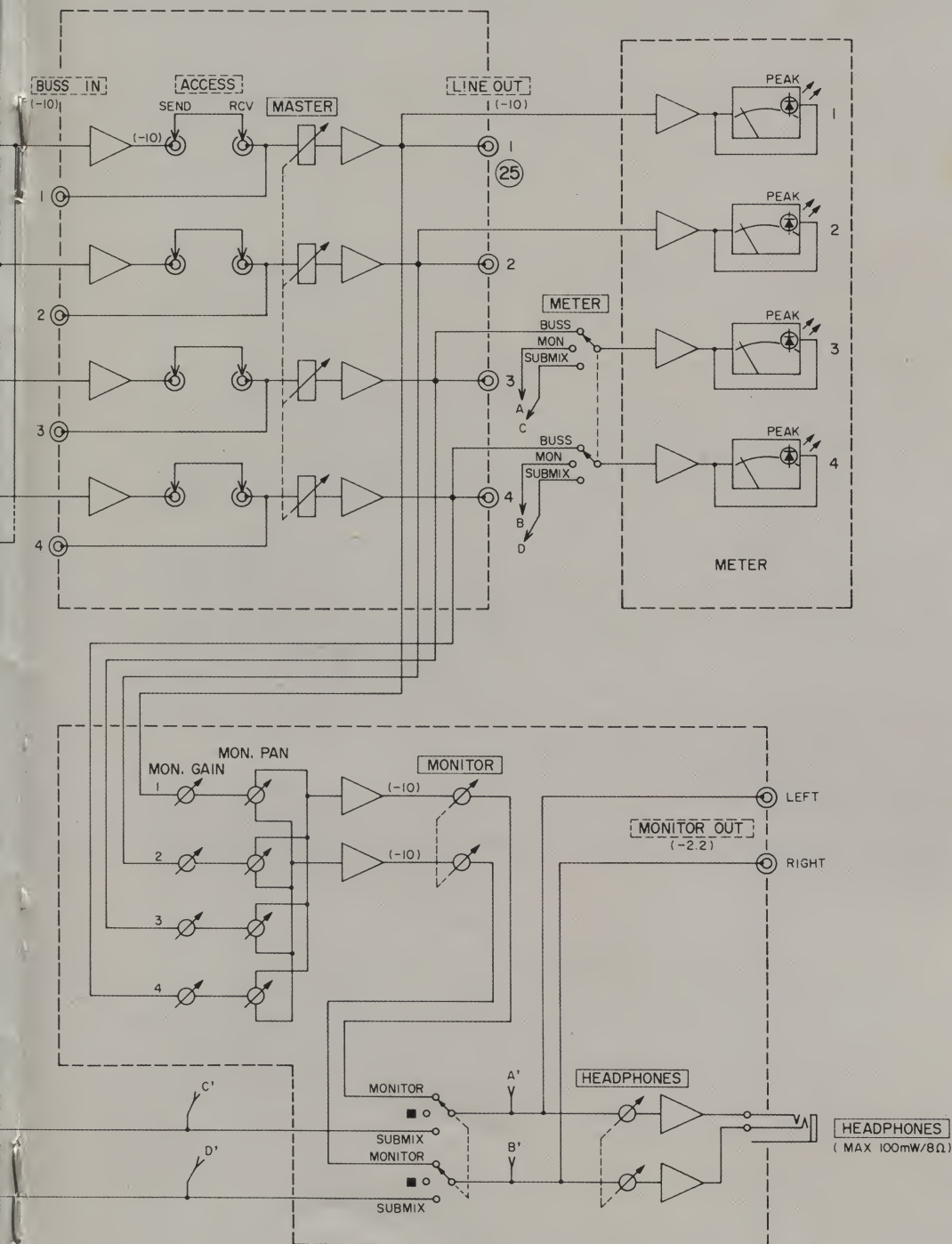
BLOCK DIAGRAM

(CHAN. 1~6)



(CHAN. 7, 8)





THE MODEL 30 CONTROLS KNOB BY KNOB—JOB BY JOB.

FROM THE INSIDE OUT

In most mixing consoles the physical arrangement of the top panel controls has very little to do with the sequence of electronic parts inside. When you're operating the mixer, you're concerned with convenience, not logical signal flow: fader in front where you can ride gain, mic/line switch in the back because it's likely you'll only move it once per session. In the module descriptions on the following pages, however, we've discussed the parts according to signal flow (per block diagram), not front panel, so you can better understand the functions. Even though the block diagram can indicate what is available in the way of extra circuit flexibility, it can't explain why a connection or switch has been included, or suggest a standard layout for your initial setup.

In the following pages, we will do our best to describe the individual functions and controls of the M-30 and how they can be arranged in more than one sequence. In the final analysis, your mixing needs may be best served by an arrangement of inputs and subsystems that you work out for yourself.



M-30 MODULE PARTS LIST, WHERE THEY ARE AND HOW THEY WORK

☐ **Mic In XLR.** A balanced three conductor transformer isolated circuit is provided on the first six modules.

A high gain 2 conductor transformer-less input is used on modules 7 and 8. This input will also accept the signal "direct" from most electric guitars and basses.

☐ **Mic Att Switch.** Three positions are provided:

- A. Set left, No effect.
- B. Set center, a "loss" of 20dB.
- C. Set right, a "loss" of 40dB.

This loss is caused in part by a pad to protect the transformer from excessive input signal, and in part by changing the gain of the first stage amplifier.

☐ **Input Transformer.** This XLR connector, "pad" and transformer are the only balanced "three wire" circuits in the M-30. The low power signal that the mic generates must be isolated from other low power signals in the real world such as RF, hum from power lines, and switching transients. The input isolation transformer becomes the sure way to deal with the problem.

☐ **Line In R.C.A. Jack.** This jack can be considered as an extra input. The significant line level input is *Tape In*. Here's why.

☐ **Tape In R.C.A. Jack.** This special input can be assigned simultaneously to the input and to the *Submix* section. Yes, you can have a *Tape In* working the *Submix* while you have a mic assigned to the input!

☐ **Input Select Switch.** This switch has three positions:

- A. Set leftwards—selects the *Mic In*.
- B. Set center—selects *Remix*. The *Tape In* connector on the back of the *Input Module*.
- C. Set rightwards (*Line*)—selects the *Line In* connector on the back of the *Input Module*. Since there are two high level (-10dBV) jacks on each *Input Module*, a total of 16 lines can be connected and routed without re-patching.

☐ **Tape In For Remix.** When the *Input Select Switch* is set to its center position *Remix* the *Input Module Tape In* jacks are internally connected to the starting point for line level signals on *Input Modules 1-8*. Selecting *Remix* on any or all *Input Modules* will not disable the feed to the *Submix*. *Tape In* signal will be available on both circuits at the same time. There are several advantages that this multiple feed offers. In *Remix*, the *Cue* function is not needed so the stereo *Submix* section can now be used as the effects send.

EFFECTS RETURN METHOD

Use the *Input Modules* that don't have mics plugged in. Much of multitrack production is done on a "one mic per track" basis and will leave you with unused modules. You can take advantage of the functions that they provide to do things to the return signal. Separate EQ can be used to improve the "sound" of the effect. Stereo is possible. Remember that in 4 track work you will have a total of four unused modules. In 8 track operation you can use the *Buss In* patch point as a return. Since *Remix* function may be selected one module at a time, a single track may be routed quickly through the EQ section and a "we'll fix it in the mix" correction tried out before the musicians leave the studio.

☐ **Cue Out Buffer.** This amp feeds the *Submix Select Switch* when *Pre* is selected, and the *Cue Out* jack.

☐ **Cue Out R.C.A. Jack.** This output carries the same signal as the *Pre* setting of the *Submix Select Switch*, and is the preferred point for *Cue* mixes. A mix made from this point will not change if you: move the *Input Fader*, use the *Mute* function, or adjust the EQ. The only thing that is more frustrating to a player than having the *Cue* "jump around" in the headphones is to have the sound of a critical part disappear entirely.

☐ **Input Module Overload L.E.D.** When signals high enough to make the *Access Send* jack output exceed +15dB are applied to an *Input Module*, this L.E.D. will light.

☐ **Access Send-Rcv Jacks.** The high gain provided by the mic preamplifier allows us to place a "patch point" in this useful location.

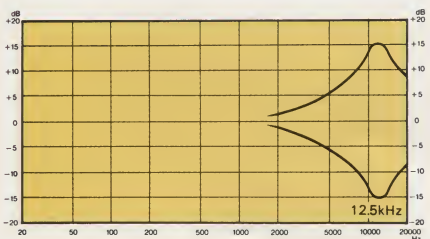
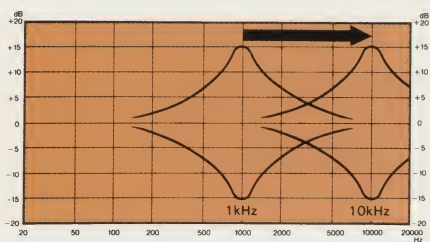
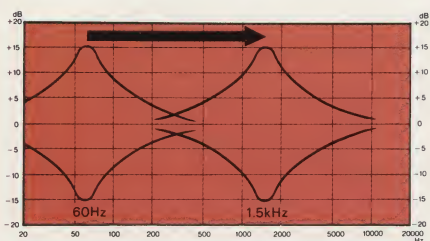


☐ Parametric (Sweep Type) Equalizer.

Two aspects of the circuit, the frequency center point (lower section of the dual concentric control) and the "boost" or "cut" (upper section) are adjustable without "steps."

The M-30 EQ section also provides a fixed frequency boost/cut single control at 12.5kHz.

Here are graphs showing the control ranges of each of the three sections.



The great advantage of a parametric or continuously "tunable" equalizer over the more conventional "fixed center frequency" types is that you can adjust the frequency center point to the precise area you need. Now the cut or boost you use will be more effective. No matter how many "frequencies" there are on a "set" type EQ it is unlikely that anyone will prove to be "just right."

☐ Input Fader. Our ultra reliable 40mm carbon pot has proved itself on all our Model 5's and Model 3's. They rarely go bad. Ask anyone who owns one of our mixers if you want a testimonial.

After Fader control, signal feeds the Post position of the Submix Select Switch. Post Fader is usually used to feed signal to an echo device when a fadeout is planned: as the Input Fader is lowered, the Post signal will also "fade" and you won't be left with a "ghost player" in your mix.

☐ Direct Out R.C.A Jack. This output can be used in combination with an outboard mixer to make up a Post Fader mix, or to feed a one-mic-per-track signal to a recorder. Going "direct" will allow you to bypass many stages and that will improve signal quality.

☐ Mute Switch. If all switches are depressed, this mute can be used as a "reverse" Solo system in Remix. Release the one you wish to work on, and you will be able to hear a single signal without "shutting down" all the other critical fader settings just to hear. Mute may also be used to add a signal to a mix at a critical point without having to worry about bringing a closed fader back to a "mark."

The Assign switches and the Pan Pot make up the last wiring order sections on each Input Module. At this point you have selected signal source, processed and routed it, decided whether or not it will also go from Pre or Post to a Submix section. It is available at the Cue (Pre) and Direct Out (Post) jacks for insertion into a subsidiary mixer, and its "main line" and Direct levels have been set with the Input Fader. What Line Out do you want to feed? How about stereo? When more than one button is down in the Assign section the Pan Pot will work.



☐ **Input Module Pan Control.** This single knob works two faders that are wired "back to back." As you rotate, one fader is turned up as the other is turned down. At dead center, each control is down just enough to compensate for the fact that two sources will have the same signal. The compensation allows you to "pan" a signal from left to right without getting an unwanted "rise" as you pass through "center."

☐ **Assign Push Switches.** Any or all switches may be locked down (assigned) simultaneously. When any two buttons are down, the *Pan* is engaged. The two button logic is always high number, *Right*, low number, *Left*.

☐ **Submix Select Switch.** Even though this switch is not on the *Input Module* all of the signal options that it controls are derived either from signal points in the *Input* chain or the patches on the *Input* back panel.

A. When set left to *Pre*—signal enters *Submix* before *Access Send-Rcv*. Only the *Mic Att* and the *Input Select Switch* affect the *Submix* when *Pre* is selected. This is the setting we recommend for *Cue* mixes. Mix action will not disturb rehearsals. This point is the same as *Cue Out*.

B. When set center to *Post*—signal enters *Submix* after the *Mute* function. If this point is used, *EQ* and *Input Fader* action will affect the *Submix*, anything "patched in" to the *Input Access Send-Rcv* will contribute its effect to the *Submix* signal as well as to the main line and *Direct Out*. This signal point is the same as the *Direct Out* with one function added. The *Mute* button does work on the *Submix* signal. *Mute* does not work on the *Direct Out*.

C. When set right to *Tape*—signal enters *Submix* directly from the *Tape In* jack on the back panel.

The *Tape* position of the *Submix Select Switch* will provide you with a totally independent source that can be completely different from the signal that appears in the *Input Module*.

SUBMIX USES AND FUNCTIONS

We assume that any multichannel recorder has only one set of playback outputs. We will have at least three

basic jobs to do that will require the playback signal:

- Simple playback to judge a performance, requiring no corrective *EQ*. In short, what did you record?
- Simple playback into a "cuing" system so partially completed tapes can be finished. This function should somehow combine the playback signals with "new" mic signals so musicians may hear a balance of both when "overdubbing."
- Final remix, when the full control capability of the system (*EQ*, effects, etc.) can be used to "fine tune" the completed master.

Three basic tasks. One tape playback signal, so, to avoid resetting all the controls on the *Input Module*, and "losing" the *EQ* and record level settings that have taken much time to get "just right," use the *Tape Ins* instead of the *Line Ins* on the *Input Modules*. From this single connection, the playback signal can now be made available to both the *Input Modules* (set *Input Select Switch* to *Remix*) and to the *Submixer* (set *Submix Pre-Post-Tape Switch* to *Tape*). These two independent switches allow you to select a different input routing for each of the 16 sections on the mixer (8 *Input Modules* and 8 *Submix* sections).

A Simple Record Check.

Move the three position *Submix Select Switch* to the rightmost position marked "Tape." Set the *Monitor/Headphone Select Switch* right, to *Submix*. The *Monitor* mix will now be derived from *Submix*, *Tape In* on each section of the *Submix* that you switch.

Many engineers use this "logic" for control room monitor all the time. "Listening" to the tape recorder electronics solves the problem of "where is the signal coming from?" Never mind what output is feeding track three, let's just listen to track three, and we won't have to remember under pressure how we "got there." With this monitor method, any line level source that carries a processed signal can be considered as a "feed" to a track, even if it has no monitor capability on the way "out" of the console. Since many tracks in multichannel work can be described as "one mic per track" recording, you can use the *Direct Outs* to "shoot" more tracks than you have *Buss Outs* if you use this method. Another advantage of this "machine monitor" is that you won't have to change anything to make a playback for the musicians. The "mix" that you have been working with will be what you get in the monitor when

you rewind and play the tape. We recommend this monitor method highly.

One More Mix

Since the M-30 has only one *Submix*, and the musicians need a *Cue* mix, you will have to adjust this "machine monitor" to suit the *Cue* requirement, and use it for both the "control room" and the *Cue* function.

☐ *Buss Access Send-Rcv Jacks*. When you need to add an effect to an entire mix, or use a limiter to protect loudspeakers or broadcast equipment, use this patch point. When no accessory device is bridged from *Send* to *Rcv*, the jumpers provided must be in place for signal to flow. There is no normal, or internal wiring.

☐ *Buss In R.C.A. Jacks*. These four connectors will allow you to cascade two 4 buss mixers together to get more functions.

☐ *Master Fader*. This single slide fader controls all four *Buss Outputs* simultaneously.

☐ *Line Out, Aux Out*. This pair of R.C.A. jacks on the back panel are wired to the same amp. The nominal "0" VU is -10dBV (.3 volt) but the maximum output before clipping is +15dBV! You get 25dB of headroom! Now we'll go back inside the M-30 and go over the *Monitor* and *Meter* functions.

☐ *V.U. Meters And Their Peak L.E.D.s*. You get the best of both ideas with this fully isolated meter circuit, because the *Meter* uses the Standard VU NAB broadcast standard (averaging) characteristic, and the *Peak L.E.D.* will show you when momentary transients are part of your program. No meter can indicate as fast as the L.E.D. It's a TASCAM "better idea." It's more expensive, but we know you'll appreciate the better method of indication that it provides.

☐ *Meter Signal Select Switch*. The last two meters can be switched to read three different sets of signal.

A. Set left—*Buss 3-4*.

B. Set center—*4x2 Monitor Out*.

C. Set right—*Submix Out*.

Since these are all significant outputs that have their own "masters," we think that you should be able to use a meter on them.

MONITOR SECTION CONTROLS

☐ *Monitor Gain and Pan*. These four fully independent dual concentric controls for level and stereo balance for each *Buss Out* allow you to make the more important sound louder in your monitor without actually running the gain to the recorder at the wrong level just to hear the performance "balanced." Since remix may be days away, you will depend on these controls to hear what is happening without compromising the technical quality of your tapes.

☐ *Monitor Master*. Final control for your loudspeakers.

☐ *Monitor And Headphone Signal Select Switch*. Three choices: the *Monitor 4x2*, the *Submix 8x2* or *Off* can be selected.

☐ *Headphone Master Volume*. Separate control for every critical *Monitor* circuit is always available on TASCAM mixers.

☐ *Headphone Output*. A solid 100 milliwatts will drive headphones to the high levels that you may need to overcome ambient conditions. If the *Band* is electric, and you are in a one room environment, this extra level may make the difference between hearing well and not being able to tell what is really going on tape.

SUBMIX CONTROLS

We've already discussed what this 8x2 subsystem can do, and where the signal sources are drawn from, but we still have some things to mention.

☐ *Submix In R.C.A. Jacks*. This stereo input will allow you to cascade more signals into the *Submix*.

☐ *Dual Concentric Gain And Pan*. The lower section is the *Pan*, the upper section is the *Gain* control.

☐ *Submix Out L/R*. Patch these outputs to the job you need done, and get to work.



SPECIFICATIONS: M30

ELECTRICAL CHARACTERISTICS

Input Selector:	
1-6 Channel:	Mic (Low Impedance)/Remix/Line
7,8 Channel:	Mic (High Impedance)/Remix/Line

Mic Input:	
(Low Impedance)—channel 1-6:	
Mic Impedance:	200 to 600 ohms nominal mics (matched for mics of 600 ohms or less)
Input Impedance:	600 ohms, balanced, XLR type
Nominal Input Level:	-60dBV (1mV)
Maximum Input Level:	+10dBV (3V) Att to 40dB

(High Impedance)—channel 7-8:	
Mic Impedance:	10k ohms nominal mics
Input Impedance:	100k ohms
Nominal Input Level:	-60dBV (1mV)
Maximum Input Level:	+10dBV (3V) Att to 40dB

Line Input:	
Input Impedance:	20k ohms
Nominal Input Level:	-10dBV (0.3V)
Maximum Input Level:	+14dBV (5V)

Tape Input:	
Input Impedance:	50k ohms
Nominal Input Level:	-10dBV (0.3V)
Maximum Input Level:	+14dBV (5V)

Line & Submix Outputs:	
Minimum Load Impedance:	5k ohms
Nominal Load Impedance:	10k ohms
Nominal Output Level:	-10dBV (0.3V) = -7.8dBu
Maximum Output Level:	+14dBV (5V) = +16.2dBu

Monitor Output:	
Minimum Load Impedance:	5k ohms
Nominal Load Impedance:	10k ohms
Nominal Output Level:	-2.2dBV (0.775V) = 0dBu
Maximum Output Level:	+14dBV (5V) = +16.2dBu

Cue & Direct Outputs:	
Minimum Load Impedance:	5k ohms
Nominal Load Impedance:	10k ohms
Nominal Output Level:	-10dBV (0.3V) = -7.8dBu

Access Send (Input/Master Section):	
Minimum Load Impedance:	5k ohms
Nominal Load Impedance:	10k ohms
Nominal Output Level:	-10dBV (0.3V)

Access Receive (Input/Master Section):	
Input Impedance:	200k ohms
Nominal Input Level:	-10dBV (0.3V)
Minimum Input Level:	-18dBV (0.126V)

Submix & Buss Inputs:	
Input Impedance:	10k ohms
Nominal Input Level:	-10dBV (0.3V)
Maximum Input Level:	+14dBV (5V)

Headphones Output:	
Load Impedance:	8 ohms, Stereophones
Maximum Output Power:	Greater than 100mW

Phono Input:	
Input Impedance:	45k ohms
Nominal Input Level:	-54dBV (2mV) at 1 kHz
Minimum Input Level:	-60dBV (1mV) at 1 kHz
Maximum Input Level:	-30dBV (31.6mV) at 1 kHz

Phono Output:	
Minimum Load Impedance:	5k ohms
Nominal Load Impedance:	10k ohms
Nominal Output Level:	-10dBV (0.3V) at 1 kHz

Fader Attenuation:	60 dB or more
--------------------	---------------

Overload Indicator Level:	25 dB above Nominal Input Level
---------------------------	---------------------------------

Peak Indicator Level:	10 dB above Nominal Output Level
-----------------------	----------------------------------

Power Requirement:	26 Watts, 50/60 Hz.
--------------------	---------------------

MECHANICAL CHARACTERISTICS

Dimensions (WxHxD):	18¼" x 6⅝" x 20½" (465mm x 160mm x 520mm)
---------------------	--

Weight:	35½ lbs (16kg)
---------	----------------

TYPICAL PERFORMANCE

Frequency Response Line Input to:	
Line Output (Buss):	30 to 20,000 Hz, ±2dB
Monitor Output:	30 to 20,000 Hz, ±2dB
Submix Output:	30 to 20,000 Hz, ±2dB

Equalizer:	
Type:	Parametric (sweep type), and Shelving
Level:	±15dB
Frequency:	(low) 60 to 1,500 Hz (middle) 1,000 to 10,000 Hz (high) 12,500 Hz, shelving

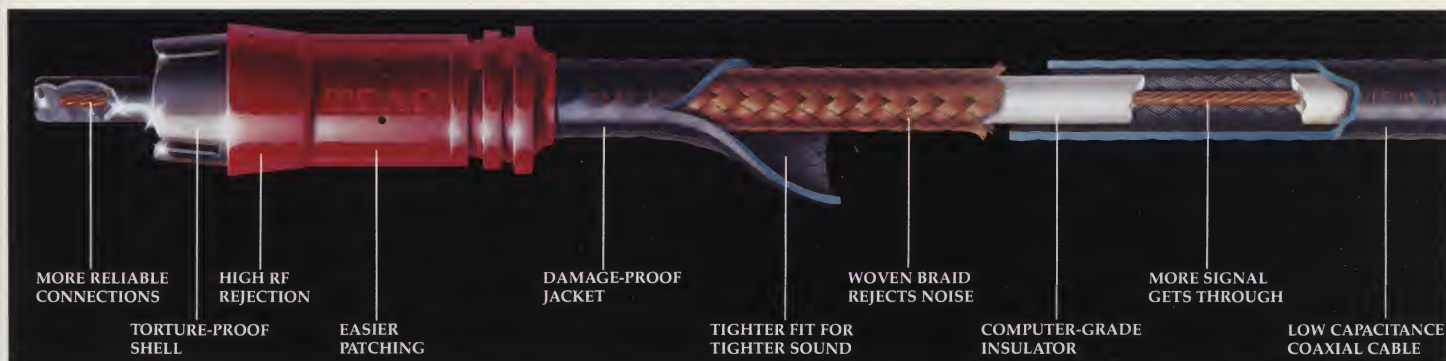
Equivalent Input Noise:	-122 dB weighted -113 dB unweighted (20 Hz to 30,000 Hz)
-------------------------	--

Signal to Noise Ratio (at Nominal Input Levels):	
1 Line to 1 Buss:	80 dB Wtd. 66 dB Unwtd.
8 Line to 1 Buss:	72 dB Wtd. 64 dB Unwtd.
1 Line to Direct Out:	80 dB Wtd. 70 dB Unwtd.
1 Line to Buss Access Send:	80 dB Wtd. 66 dB Unwtd.
1 Mic to 1 Buss:	62 dB Wtd. 58 dB Unwtd.
8 Mic to 1 Buss:	59 dB Wtd. 53 dB Unwtd.
1 Mic to Direct Out:	64 dB Wtd. 60 dB Unwtd.
1 Mic to Buss Access Send:	65 dB Wtd. 60 dB Unwtd.

Cross Talk:	Buss-Line 60 dB 1kHz Input Switch, 1kHz, 65 dB at Nominal Level
-------------	--

Total Harmonic Distortion (THD):	Mic Input to Buss Output 0.07% (at 1kHz, Nominal Input Level) Line Input to Buss Output 0.07% (at 1kHz, Nominal Input Level)
----------------------------------	---

In these specifications, 0 dBV is referenced to 1.0 Volts rms. Actual voltage levels are also given in parentheses. To calculate the 0 dB = 0.775 Volt reference level (i.e., 0 dBu or 0 dBm in a 600 ohm circuit), add 2.2 dB to the listed dBV value; i.e., 0 dBV = 1.0 Volt = +2.2 dBu. Changes in specifications and features may be made without notice or obligation.



TASCAM PROFESSIONAL AUDIO CABLES

There are vast differences in cable design and performance, and those differences can make or break an otherwise excellent sound system. When you're investing in high quality audio equipment, it makes sense to use only the best—TASCAM Professional Audio Cables. Anyone who's switched to them will tell you they're worth every cent. Why spend good money on equipment, and then sacrifice total system performance to save a few bucks on cables?

LOW CAPACITANCE

Our cables feature very low capacitance, under 15 picofarads per foot (0.000,000,000,0015 Farads), so they don't act as high-frequency roll-off filters as do typical cables of 100 to 300 pF/foot. In addition, our cables use an ultra-high density bare-copper braided shield (99% coverage), not the typical loose braid or wrap, so electrostatic noise (buzz or hash) and RFI (CB or broadcast signals) are kept out of your program.

Low capacitance is important, and so is consistent capacitance; that is, you want the electrical coupling of center conductor-to-shield to remain the same throughout the cable, even if it is sharply bent, crushed, flexed, or tugged. Should the local cable capacitance change, noise and/or signal losses often result. You're safe with TASCAM cables because we utilize the unique dielectric known as Datalene.*

This special insulation keeps the stranded signal conductor perfectly centered within the shield. Datalene is about as flexible as foam core dielectrics but far more resistant to extreme heat or cold, and it has a "memory," so it retains its shape after flexing. Datalene also acts as a mechanical shock absorber, guarding against external impacts which, in other cables, might sever the center conductors and cause intermittent contact.

HIGH RELIABILITY, LOW LOSS

Our cables utilize 7-strand center conductors, 4 of pure copper for minimum resistance, and 3 of copper weld stainless steel for strength. The multiple strands not only add to the flexibility of the cable, they offer less electrical resistance at audio frequencies than comparable gauge wires having fewer strands—due to "skin effect," the tendency of alternating current to flow along the surface of a wire that translates to less noise and less loading in long cable runs.

LONG TERM STABILITY

The outer cable jacket will not slip if you pull hard on the cable. Together the stainless steel and copper multi-strand, non-migrating Datalene dielectric, high-density braid, and non-slip vinyl jacket mean you can put a sharp bend in a TASCAM cable, roll a tape machine over it, or wrap it in a tight coil for a month, but you can't degrade the performance. TASCAM cable thus provides the kind of stability you need in a professional audio system.

You can purchase them individually in length from 6 inches to 20 feet, or in color-coded sets of eight for fast channel or function ID.

STEEL SHELL CONNECTORS

Our connectors are different. The nickel-plated brass center pin is a bit longer than most, ensuring good contact in all R.C.A. jacks. The cadmium plated steel outer shell of the connector includes a gentle ridge which burnishes the mating jack when the connector is twisted, ensuring good electrical contact; the molded insulation around the shell actually has an oval shape to make it easier to grasp and twist. These metals in our male R.C.A. plugs are the same as those used in most female R.C.A. jacks, so we avoid something that even a gold plated plug can't cure—corrosion and galvanic problems caused by environmental interaction with dissimilar metals.

When we join the connector to the cable, we insert the cable's stranded center conductor all the way into the pin and then fill the pin with solder. The braid is wrapped and soldered a full 120° around the shell, not tacked at one spot, so you get maximum shielding and strength.

If all this sounds like a lot of detail for a cable, it is, but why settle for less? Get all the sound you paid for. Use TASCAM cables.

*"Datalene" is the registered trademark of Belden Inc., Richmond, Indiana.

TEAC CORPORATION 3-7-3 NAKA-CHO MUSASHINO TOKYO, PHONE (0422) 53-1111
TEAC CORPORATION OF AMERICA 7733 TELEGRAPH ROAD, MONTEBELLO CA 90640 PHONE (213) 726-0303
TEAC AUSTRALIA PTY., LTD. 115 WHITEMAN STREET, SOUTH MELBOURNE VICTORIA 3205 PHONE 699-6000
COPYRIGHT, 1982, TEAC CORPORATION OF AMERICA, PRINTED IN U.S.A. G.R. 5-82

TASCAM
TEAC Production Products